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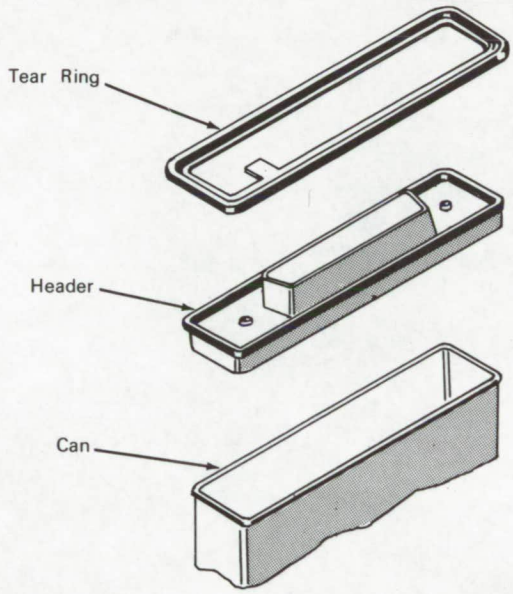
NASA TECH BRIEF

Use of Tear Ring Permits Repair of Sealed Module Circuitry



The problem: To permit reopening of sealed modular electronic circuit packages for repair of the circuitry. Previous packaging techniques, necessary for environmental protection, meant that the sealed container could not be opened and expensive electronic modules had to be discarded because of the failure of single components.

The solution: Use of a tear ring to break the seal so that the circuitry can be removed for repair. This tear ring connects the header on which the module is mounted to the container.

How it's done: The electronic circuit assembly is fastened to a metal header, containing a connector, and placed in a mating container. A tear ring is put over the container and header, and the edges seam rolled to provide a strong mechanical joint. Potting compound is injected through the side slots, which are covered and cemented to seal the container. When repairs are necessary, the tear ring is pulled loose, the container heated to soften the potting compound, and the header and attached circuitry removed.

To reseal the module, the same procedure is followed, using a new tear ring, new container if required, and more potting compound.

Notes:

1. As this improved packaging technique allows for repair of sealed-in electronic circuits, rather than replacement of the entire unit, it could have application in highly specialized types of sealed circuit

(continued overleaf)

packaging of electronic components, e.g., in aircraft, marine control, and communications equipment. It may also be of interest to manufacturers of connectors and module headers.

2. Due to the heat necessary to liquify the potting compounds, the components must be capable of withstanding temperature stresses.

3. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Marshall Space Flight Center
   Huntsville, Alabama, 35812
   Reference: B65-10014

Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated.

Source: International Business Machines Corp. under contract to Marshall Space Flight Center (M-FS-210)